

REMARKS

Claims 1 to 20 are all the claims pending in the application.

The Examiner requires that applicants file a substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a).

The Examiner does not provide any reason why he is making the requirement. Applicants submit that the specification is in proper idiomatic English. Accordingly, applicants request the Examiner to withdraw the objection. If the Examiner identifies any particular portion of the specification that requires correction, applicants will amend the specification to provide any correction that may be necessary.

Claims 9 and 17 have been objected to because the particle size is described in units of millimeters (mm), rather than micrometers (μm) as they were in the last set of claims. The Examiner states that this appears to be a typographical error, and that for purposes of examination, he assumes the claims are directed to units of micrometers (μm).

The Examiner is correct that claims 9 and 17 contains a typographical error. Applicants have amended claims 9 and 17 to correct this error.

Claims 1, 2, 5-7, 9-12, 15 and 17-20 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,177,508 B1 to Ohmori et al, with further evidence provided by U.S. Patent No. 5,567,563 to Minami.

Applicants submit that Ohmori et al, as evidenced by Minami, do not disclose the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

The present invention as set forth in claim 1 as amended above is directed to a powdered resin composition for slush molding comprising a thermoplastic polyurethane resin powder (B) as the main component and a fine particle powder (A) of a vinyl type copolymer comprising a copolymer of a monomer (a01) having one vinyl group and a monomer (a02) having two or more vinyl groups and having a cross-linked structure as a powder flowability improver, wherein the fine particle powder (A) is not melted in the temperature range of 200 to 300°C, the resin powder (B) has a volume average particle diameter in a range from 70 to 300 μm and is capable of melting at 200 to 300°C, and the thermoplastic polyurethane resin powder (B) and the fine particle powder are dry-blended.

Thus, applicants have amended claim 1 to state that the fine particle powder (A) is a powder flowability improver, and to state that the thermoplastic polyurethane resin powder (B) and the fine particle powder are dry-blended. Applicants have made similar amendments to independent claim 5, which recites a fine particle powder (E).

Applicants submit that Ohmori et al do not anticipate the present invention as recited in independent claims 1 and 5 because Ohmori et al do not teach the specific combination of the specific thermoplastic polyurethane resin powder (B) and the fine particle powder (A) (claim 1) or (E) (claim 5) of the present claims. None of the working Examples of Ohmori et al contain an example of a composition containing the combination of all of the components of the present claims, and Ohmori et al, therefore, do not anticipate these claims.

Example 3 of Ohmori et al contains a styrene resin powder as a blocking inhibitor (E). This is the only working Example of Ohmori et al that appears to contain a vinyl type polymer.

Example 1 of Ohmori et al employs a urethane resin powder as the blocking inhibitor and

Example 2 employs a phthalic maleimide resin as a blocking inhibitor.

Example 3 of Ohmori et al does not provide any detailed information on the styrene resin, other than to say it has a heat softening initiation temperature of 200°C and an average particle diameter of 1 μm.

Applicants submit that one of ordinary skill in the art would understand that the styrene resin powder of Example 3 of Ohmori et al would be a homopolymer, and not a copolymer.

Comparative Example 3 of the present specification appears to employ the same styrene resin powder as in working Example 3 of Ohmori et al. As shown in Table 2 of the present specification, Comparative Example 3 of the present specification did not achieve the results that are obtained by the present invention with respect to storage stability, skin surface gloss, and mold staining property.

In view of the above, applicants submit that Ohmori et al do not anticipate the present claims because Ohmori et al do not contain any example of a composition containing the combination of all of the components of the present claims, and the broad, general disclosure of Ohmori et al does not lead one to the specific combination set forth in the present claims from the many possible combinations of components disclosed by Ohmori et al.

In addition, Ohmori et al do not disclose all of the features of the presently claimed invention, especially those of the fine particle powder (A) and the fine particle powder (E), which are either of the copolymer of a monomer (a01) and a monomer (a02) (Claim 1), or the copolymer of a monomer (a01) and a monomer (a03) (claim 5), and both are including a cross-linked structure and not melted in the temperature range of 200-300°C.

Ohmori et al disclose suitable resins such as polyurethanes, polyimides, styrenic resins, polyamides, acrylic resins and epoxy resins, at col. 6, lines 21-23. A preferred resin of Ohmori et al is a thermoplastic resin powder whose heat softening initiation temperature is 170-280°C, as described at col. 6, lines 31-34 at col. 6).

Ohmori et al disclose that exemplary of such resins are “polyurethanes, polyimides, styrenic resins, polyamides, acrylic resins and epoxy resins, as described in U.S. Pat. No. 5,567,563,” to Minami. See col. 6, lines 24 to 26 of Ohmori et al. However, Minami actually discloses a binder resin (A), which suitably is selected from polyester resins (A1), styrenic and/or (meth)acrylic resins (A2), and epoxy resins (A3), as described at col. 2, lines 26 to 33 of Minami, and polyamide resins (A4), and polyurethane resins (A5), as disclosed at col. 6, lines 47 to 49 of Ohmori et al. Polyimides are not included in the Minami description, and the order of resins listed in Minami are different from the Ohmori et al list at col. 6, lines 24 to 26. Given that, the Ohmori et al citation of Minami is not clear with respect to the precise parts of the disclosure of Minami that are being referred to by Ohmori et al.

If the entire disclosure of binder resins of Minami are to be cited by Ohmori et al, then all of the listed examples in column 2 through column 8 of Minami are included. The Examiner, however, does not indicate how he can indicate a copolymer of the present invention within such a huge lists of compounds without the guidance of the present specification.

In Paragraph 7 of the Office Action, the Examiner refers to a hydroxyl functionalized styrenic and/or acrylic resin blocking inhibitor (E) of the prior art. However, Ohmori et al, as well as Minami, do not have any disclosure of such a blocking inhibitor (E).

The Examiner states that applicants have argued that 1) the blocked polyisocyanate of Ohmori et al will not crosslink the blocking inhibitor (E) because the blocking group on the polyisocyanate will not be released until the molding step, and 2) a hydroxyl functional blocking inhibitor (E) may not be crosslinked by the polyisocyanate.

The Examiner asserts that this argument is not persuasive because 1) even if this is so, the composition of Ohmori et al still reads on the claimed composition comprising a crosslinked structure in the vinyl type copolymer, and 2) applicant has provided no evidence that the blocking inhibitor (E) will not undergo a crosslinking reaction with the polyisocyanate and the reaction between the isocyanate groups and hydroxyl groups will be heavily favored.

Applicants have argued that the polyisocyanate in Ohmori et al will not be released until the molding step. The Examiner appears to respond that at the time of the molding step in Ohmori et al, the composition of the present invention would then be produced.

In response, applicants submit that the Examiner's argument misses the point because the fine particle powders (A) and (E) of the present invention are compounded as a powder flowability improver, which can improve the powder flowability of a thermoplastic polyurethane resin powder caused by the lapse of time when it is left as it is, as disclosed in paragraphs [0004]-[0007] of the present specification, and wherein the resin powder composition can be tested for storage stability (blocking ratio) and repose angle (powder flowability), as disclosed in the Examples of the present application in paragraphs [0091] -[0096] of the present specification.

In addition, applicants point out that Example 1 of Ohmori et al discloses that F1 (a urethane elastomer powder that is produced in Production Example 4 and containing ε caprolactam blocked trimer of IPDI: VESTAGON B1530) and a urethane resin powder as a

blocking inhibitor were admixed at 40°C or lower. These components, therefore, are not reacted with each other because the reaction temperature of blocked polyisocyanates with hydroxyl group is known to be about 120°C or higher. Therefore, the blocking inhibitor in the slush molding composition S1 of Example 1 of Ohmori et al will not be crosslinked by blocked polyisocyanates. The same holds true for Examples 2-3 of Ohmori et al.

In view of the above, applicants submit Ohmori et al do not anticipate the present claims and accordingly, request withdrawal of the rejection.

Claims 8 and 16 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,177,508 B1 to Ohmori et al in view of Patnaik.

Claims 8 and 16 are dependent claims that depend from independent claims 1 and 5, respectively. Applicants submit that claims 8 and 16 are patentably over Ohmori et al for the same reasons as discussed above in connection with the rejection of claims 1 and 5 over Ohmori et al. Patnaik does not supply the deficiencies of Ohmori et al.

In view of the above, applicants request withdrawal of this rejection.

Claims 3, 4, 13 and 14 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,177,508 B1 to Ohmori et al, with further evidence provided by U.S. Patent No. 5,567,563 to Minami, and further in view of U.S. Patent No. 4,737,432 to Tanaka et al.

In response, applicants point out claims 3 and 4 are dependent claims that depend from claim 1, and that claims 13 and 14 are dependent claims that depend from claim 5. Applicants

submit that claims 3, 4, 13 and 14 are patentable over Ohmori et al for the same reasons as discussed above in connection with the rejection of claims 1 and 5 over Ohmori et al.

Further, the Examiner states in the Office Action that applicants have argued that the MFT of the toner of Minami et al is low and in the examples the MFT is $<160^{\circ}\text{C}$. The Examiner states that this argument is not persuasive because the MFT of the toner in Minami is merely the minimum fixing temperature and not the melting temperature [column 1, lines 17-20]. Also, the Examiner states that the MFT values cited in applicants' arguments are for a toner of a polyester resin (A-i) [column 13, line 2] and other materials [column 13, lines 5-8; Table 1].

In response, applicants point out that the MFT values of a polyester resin (A•iii) can be cited as 145°C in TABLE 6 of Minami.

The Examiner also states in the Office Action that applicants have argued that the melting temperature of the styrenic and/or (meth)acrylic resins (A2) in Minami is probably below 200°C because the Tg of (A2) is $40-85^{\circ}\text{C}$ while the Tg of resins (A1) is also $40-85^{\circ}\text{C}$ and the softening point of (A1) is $70-180^{\circ}\text{C}$. The Examiner states that this argument is not persuasive because the resins (A1) are polyester resins [column 2, line 29] and do not reflect the properties of the styrenic and/or (meth)acrylic resins. The Examiner states that the Tg of (A2) alone does not reflect the melting temperature of the resins. The Examiner argues that the disclosed polymers of Minami contain all the structural limitations of the claimed polymers, and henceforth should have the same inherent properties as the claimed polymers including melting temperature.

In response, applicants point out that the melting point of (A2) of Minami cannot be determined because no detailed description about (A2) can be found in Minami's disclosure.

Applicants believe that the disclosed polymers in Minami are not identified with respect to their the constitution, except those in the Examples, so one cannot say they have a crosslinked structure.

As one can see in the present specification, a production method of the crosslinked copolymer may employ a monomer (a01) and a monomer (a02) as disclosed in paragraph [0053] of the present specification, or a crosslinking agent (a04), as disclosed in paragraph [0054] of the present specification. Without any explicit indication of such features, one of ordinary skill in the art would not think of a crosslinked polymers, unless there was a specific indication of a cross-linking.

In view of the above, applicants submit Ohmori et al, Minami, and Tanaka et al do not disclose or render obvious the present claims and, accordingly, request withdrawal of the rejection.

Claims 1-6, 9-14 and 17-20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-038453 to Kanetani et al, in view of U.S. Patent No. 4,022,849 to Jin et al. The Examiner provides an English translation of Kanetani et al, and refers to this translation throughout the rejection.

Applicants submit that Kanetani et al and Jin et al do not disclose or render obvious the presently claimed invention and, accordingly, request withdrawal of this rejection.

Kanetani et al disclose, in page 10, second paragraph of the translation, that polyvinyl chloride may be used, and that the amount thereof should be 10-300 ppw per 100 ppw polyurethane resin. This amount of 10-300 ppw per 100 ppw polyurethane resin, however, is larger than the amount used for anti-blocking purpose, such as the amount employed with the

fine particle powder that is used as a powder flowability improver in the powder composition of the present invention. The use of such a large amount of polyvinyl chloride in Kanetani et al can deteriorate the anti-blocking purpose and cause staining of the mold.

One of ordinary skill in the art reading the disclosure of Kanetani et al, therefore, would not think that the polyvinyl chloride of Kanetani et al is used as a powder flowability improver.

Jin et al also do not teach that a crosslinked resin powder can be used as a powder flowability improver.

On the other hand, the present invention uses the resin powder (A) or (E) as a powder flowability improver, and the amount may be from 0.1 % by weight to 5 % by weight of the resin powder (B), as set forth in claims 10 and 18 of the present application.

The Examiner states that Kanetani et al in view of Jin et al do not explicitly teach a powdered resin composition comprising 0.1% by weight to 5% by weight of vinyl type copolymer to the thermoplastic resin powder (B). The Examiner states that Jin et al teach that the amount of crosslinked vinyl halide copolymer which may be admixed with a thermoplastic polymer substrate will depend, primarily, upon such factors as the particular crosslinked vinyl halide copolymer and thermoplastic polymer substrate which are to be blended with one another, the degree of fire retardancy desired in the resulting blend, the degree of clarity, hardness and other specific physical properties which were sought as well as other technical and economic considerations known and understood by those skilled in the art [column 6, line 52-62]. The Examiner asserts that Jin et al, therefore, teach that the amount of crosslinked vinyl halide copolymer added is a result-effective variable. The Examiner then asserts that the discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.

In view of this, the Examiner argues that it would have been obvious to one of ordinary skill in the art to utilize the crosslinked vinyl halide copolymer in a chosen amount, including those within the scope of the present claims, so as to produce desired end results with respect to the degree of fire retardancy desired in the resulting blend, the degree of clarity, hardness and other specific physical properties.

In response, Jin et al teach that the amount of crosslinked vinyl halide copolymer added is a result-effective variable with respect to such properties as fire retardancy. Jin et al teach that the amount of the crosslinked vinyl halide copolymer that is added should be 5 to 50% of the total weight of the polyblend that is formed from blending with another polymer. One of ordinary skill in the art might be led to optimizing the amount within the specific ranges disclosed by Jin et al for the purposes of Jin et al, but would have no reason to optimize amounts outside of the range of Jin et al, especially for a purpose not disclosed by Jin et al.

Further, Kanetani et al clearly disclose the amount that can be used in their invention, but the specific purpose of use as a powder flowability improver according to the present invention is not taught by Kanetani et al and Jin et al, and the result to be achieved is unknown.

Accordingly, even if a result effective variable may be optimized, a variable to achieve an unknown result would not be optimized. One of ordinary skill in the art optimizing the amount in Kanetani et al would optimize the amount within the range disclosed by Kanetani et al and would have no reason to modify that amount outside the range taught by Kanetani et al for a purpose that is not disclosed by Kanetani et al.

In view of the above, applicants submit that Kanetani et al and Jin et al do not disclose or render obvious the presently claimed invention and, accordingly, request withdrawal of this rejection.

Claims 8 and 16 have been rejected under 35 U.S.C. 103(a) as being unpatentable over JP 02-038453 to Kanetani et al, in view of U.S. Patent No. 4,022,849 to Jin et al, as applied to claims 1 and 5 above, and further in view of U.S. 2003/0098114 A1 to Samurkas et al

Claims 8 and 16 are dependent claims that depend from independent claims 1 and 5, respectively.

Applicants submit that claims 8 and 16 are patentable over Kanetani et al and Jin et al for the same reasons as discussed above in connection with the rejection of claims 1 and 5 over these references. Samurkas et al do not supply the above discussed deficiencies.

In view of the above, applicants request withdrawal of this rejection.

Claims 1, 3-6, 9, 10, 12-14, 17, 18 and 20 have been rejected under 35 U.S.C. 103(a) as being unpatentable over the newly cited U.S. Patent No. 7,005,480 B2 to Kinsho et al.

Applicants submit that Kinsho et al do not disclose or render obvious the presently claimed invention and, accordingly request withdrawal of this rejection.

Claims 11 and 19 have not been included in this rejection. Applicants have amended claims 1 and 5 to incorporate the substance of claims 11 and 19, respectively. Accordingly, applicants submit that this rejection has been overcome.

Further, Kinsho et al disclose at column 11, lines 40 to 46 as follows:

“to form resin particles (B), whereby the resin particle (A) is adsorbed, as it forms, on the surface of the resin particle (B) to prevent coalescence of the resin particles (B). As a result, the particle diameter of resin particles (C) can be converged to achieve a more effective particle diameter uniformity.”

Kinsho et al further disclose, at col. 28, lines 55-62, as follows:

“The resin particles (B) of the invention can be provided with a smooth surface or a suitable convexoconcave by varying... the depth of embedment of resin particles (A) in resin particles (B)...

The method of producing of Kinsho et al is disclosed in, for example, claim 1 of Kinsho et al.

On the other hand, the resin composition of the present invention is a mixture of the resin powder (B) and the fine particle powder (A) or (E) as a powder flowability improver, which feature is explicitly claimed in claims 1 and 5.

In view of the above, applicants submit that Kinsho et al do not disclose or render obvious the presently claimed invention and, accordingly request withdrawal of this rejection.

Claims 7 and 15 have been rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 7,005,480 B2 to Kinsho et al in view of U.S. Patent No. 3,962,370 to Hutchinson.

Claim 7 and 15 are dependent claims that depend from claims 1 and 5, respectively. Applicants submit that claims 7 and 15 are patentable over Kinsho et al for the reasons discussed above. Hutchinson does not supply the deficiencies of Kinsho et al.

In view of the above, applicants request withdrawal of this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

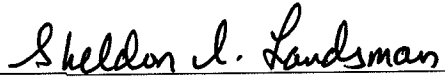
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